

1. (Cancelled)

2. (Cancelled)

3. (Currently Amended)      An adaptive equalizer for generating an error signal, the adaptive equalizer comprising:

a summer that receives an input signal and a decision feedback equalizer output signal and provides a difference signal indicative thereof;

a trellis decoder that receives and decodes the difference signal to provide a decoded output signal;~~having a decoder input port for accepting a decoder input signal and a decoder output port for providing a decoder output signal;~~

a mapper, which receives the decoded output signal and maps and scales the decoded output signal to provide a mapped and scaled output signal~~wherein the decoder output signal is mapped and scaled by the mapper to produce a decision feedback equalizer input signal; and~~

a decision feedback equalizer that receives the mapped and scaled output signal and the difference signal and generates a raw error signal indicative of the difference, and processes (i) the mapped and scaled output signal, (ii) the difference signal and (iii) the raw error signal to provide the decision feedback equalizer output signal.~~having a decision feedback equalizer input receiving the decision feedback equalizer input signal and a decision feedback equalizer output providing a decision feedback equalizer output signal, where the decision feedback equalizer output couples operably to the decoder input port; and~~

~~wherein the error signal is generated by subtracting the decoder input signal from the decoder output signal.~~

4. (Cancelled)

5. (Currently Amended)      An adaptive equalizer comprising:

an FIR filter having an FIR filter output;

a trellis decoder having a trellis decoder input coupled to the FIR filter output;

a mapper coupled to the trellis decoder, having a mapper input, a first mapped and scaled output and a second mapped and scaled output, the mapper being coupled to the trellis decoder output; and

a decision feedback equalizer having a DFE input and a DFE output, wherein the DFE input is coupled to the first mapped and scaled output;

wherein an error signal is generated by subtracting the trellis decoder input from the second mapped and scaled output.

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9.(New) An adaptive equalizer, comprising:

a summer that receives an input signal and an equalizing data signal, and provides a difference signal indicative thereof;

a trellis decoder that receives the difference signal and provides a decoded output signal;

a mapper that receives the decoded output signal, and maps and scales the decoded output signal to provide a mapped and scaled output signal; and

a decision feedback equalizer that receives and processes (i) the mapped and scaled output signal and (ii) the difference signal to provide the equalizing data signal.

10.(New) The adaptive equalizer of claim 9, wherein the trellis decoder comprises a Viterbi decoder.

11.(New) The adaptive equalizer of claim 3, comprising:

a filter that receives and filters a signal to provide the input signal.

12.(New) The adaptive equalizer of claim 3, wherein the trellis decoder comprises a Viterbi decoder.

13.(New) The adaptive equalizer of claim 3, wherein the adaptive equalizer is configured and arranged to process 8VSB signals.

14.(New) The adaptive equalizer of claim 3, wherein the adaptive equalizer is configured and arranged to process quadrature amplitude modulation (QAM) signals.

15.(New) The adaptive equalizer of claim 3, wherein the adaptive equalizer is configured and arranged to process offset quadrature amplitude modulation (QAM) signals.

16.(New) The adaptive equalizer of claim 13, wherein the trellis decoder comprises at least sixteen stages.

17.(New) The adaptive equalizer of claim 5, wherein the adaptive equalizer is configured and arranged to process 8VSB signals, and the trellis decoder comprises at least sixteen stages.

18.(New) The adaptive equalizer of claim 17, wherein the decision feedback equalizer also receives the error signal and processes the first mapped and scaled output and the error signal to generate the DFE output, and the trellis decoder comprises a Viterbi detector.

19.(New) The adaptive equalizer of claim 9, comprising:  
a filter that receives and filters a signal to provide the input signal.

20.(New) The adaptive equalizer of claim 19, wherein the input signal is a vestigial sideband encoded signal, and the trellis decoder comprises at least sixteen stages.

21.(New) An adaptive equalizer comprising:

a trellis decoder having a trellis decoder output;

a mapper coupled to the trellis decoder output, having a mapper input, a first mapped and scaled output and a second mapped and scaled output; and

a decision feedback equalizer having a DFE input and a DFE output, wherein the DFE input is coupled to the first mapped and scaled output;

wherein an error signal is generated by subtracting the trellis decoder input from the second mapped and scaled output.

22.(New) The adaptive equalizer of claim 21, wherein the decision feedback equalizer also receives the error signal and processes the first mapped and scaled output and the error signal to generate the DFE output.

23.(New) The adaptive equalizer of claim 22, wherein the trellis decoder comprises a Viterbi detector.

24.(New) The adaptive equalizer of claim 22, wherein the adaptive equalizer is configured and arranged to process an amplitude modulated signal.